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APPLICATION NO. .	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,016	03/19/2004	King Chung	15353US02	7796
23446	7590	09/07/2005	EXAMINER	
MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661			PATEL, JOY	
			ART UNIT	PAPER NUMBER
			3762	

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

T&F

Office Action Summary	Application No.	Applicant(s)	
	10/805,016	CHUNG ET AL.	
	Examiner	Art Unit	
	Joy P. Patel	3762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. No IDS has been submitted.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract is objected to because it exceeds the required 150-word limit.
Appropriate correction is required.
3. The disclosure is objected to because of the following informalities: there are multiple grammatical errors present within the disclosure. Appropriate correction is required.
4. On paragraph 7, line 4, "depend" should be changed to depending.
5. On paragraph 8, line 3, "relationship" should be changed to "relationships".
6. On paragraph 8, line 4, "instants" should be changed to "instances".

7. On paragraph 9, lines 9-10, "Algorithms take advantage...." should be changed to "Algorithms that take advantage..."
8. On paragraph 17, line 5, "connection" should be changed to "connections" and "signal" should be changed to "signals".
9. On paragraph 19, line 1, the phrase "a system of a", should be removed.

Claim Objections

10. Claim 30 is objected to because of the following informalities: It is composed of more than one sentence. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 recites the limitation "the algorithms of the first processor...algorithms of the second processor" in lines 1-3. There is insufficient antecedent basis for this limitation in the claim. Claim 3, is dependent upon claim 1. However, claim 1 does not mention an "algorithm" for its processors.

12. Claim 23 is rejected under 35 U.S.C 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 23 is indefinite and unclear as to whether the mentioned second processor is the second processor mentioned in claim 1. If it is the same second processor that is claimed in claim one, the word "a" in the phrase "...further comprises a second processor..." should be changed to either the or said.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

13. Claims 1-24 are rejected under 35 U.S.C. 101 because as evidenced by claims 3 and 20, the first processor could merely be an algorithm, rather than the required computer readable medium to satisfy 35 U.S.C. 101. In claim 3, it is disclosed, "...the first processor is at least one of algorithms or chips..." However, an algorithm is not patentable. An algorithm is only patentable if it is placed on a computer readable media.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3762

14. Claims 1-3, 5-10, 13-17, 20-26, and 29 are rejected under 35 U.S.C. 102(b) as being unpatentable by Schulman et al. (US 5,531,774).
15. In regard to claims 1 and 2, Schulman discloses a cochlear implant system comprising a microphone (signal input device; See figure 1, element 18), a first processor, which records data from the signal input device (the WP (wearable processor), element 16 on figure 1), and a second processor (Figure 1, element 46). For purposes of examination, "encoded" is taken to mean, converted into a signal (e.g. electrical signal) that the stimulator can read. In regard to the encoding performed by the second processor, Schulman discloses that the data signals received by the second processor (46) can be processed to generate stimulation signals for the electrodes implanted in the cochlea. (Column 3, lines 21-26).
16. In regard to claim 3, Schulman discloses that the WP receives and processes audio signals (Column 3, lines 15-18). Therefore, it is a processor that is commonly used in audio devices.
17. In regard to claims 5, 9, 10, and 17, Schulman discloses that the wearable processor, which would be apparent to those of ordinary skill in the art to have a housing, (element 16 on figure 1) is composed of a first processor as well as a telemetry receiver (an input device; element 36 on figure 1).
18. In regard to claim 6, Schulman discloses an ICS (element 12 on figure 1) comprised of a processor (element 46 on figure 1) and a receiver (element 40 on

figure 1), which receives processed data from the first processor. This receiver is therefore a signal input device.

19. In regard to claims 7 and 16, Schulman discloses that the WP processes the incoming audio signals and sends the processed data to the ICS. Schulman further discloses that the ICS processes this incoming data and uses it to generate and apply stimulation signals to the electrodes implanted within the cochlea (Column 3, lines 15-25), (Column 5, lines 3-5).
20. In regard to claim 8, Schulman discloses that the WP is externally wearable (Column 3, lines 13-14). The fact that the is being sent from the external processor to the internal cochlear stimulator, coupled with the fact that telemetry transmitters (element 42) and telemetry receivers (36) are being implemented indicates that wireless means are being implemented to transmit data between the two processors. Therefore, the data transmitter (34) is wirelessly transferring data to the receiver (40).
21. In regard to claims 13, 14, and 15, figure 1 depicts that the WP and ICS units are both contain a signal input device (elements 36 and 40, respectively) and are separate from one another. Therefore, a signal input device (element 36) is housed in the first case (WP) and a signal input device (element 40) is housed in the second case (ICS), as would be apparent to one of ordinary skill in the art.
22. In regard to claim 21, it is noted that the data that is transmitted from the first processor is still considered to be a part of the first processor. The second processor then utilizes this data (Refer to #20 of this detailed action).

23. In regard to claim 22, Schulman discloses, "In addition, signals from the WP to the ICS to the WP on one carrier frequency and from the WP to the ICS on another frequency can be transferred via a single coaxial cable between the headpiece (14) and the WP (16)" (Column 4, lines 41-44). Therefore, due to the presence of the coaxial cable, a connection can be made to the feeding point (the WP end of the coaxial cable) to insert data into the system, and to the extracting point to extract data.
24. In regard to claims 20 and 23, refer to figure 1. For these claims, the multi-channel filter bank (24) will be considered to be the first portion of the second processor (46). Furthermore, elements 22, 24, 28, 30, 32, 34, and 36 will be considered to be the components of the first processor. Therefore, processor 1 is now connected between the multiple signal processing stages of the second processor. Furthermore, processor 1 contains an A/D converter (28), which contains a signal processing algorithm, since it is responsible for converting analog signals into digital signals and vice versa.
25. In regard to claims 25 and 29, Schulman discloses an earpiece, which receives audio signals and transmits them to the wearable processor (WP). Here, the WP receives and processes the incoming signal and then transmits it to the implantable cochlear stimulator (ICS). The ICS includes a means for receiving and further processing the signal from the wearable processor and generating or updating the stimulation signals that are being sent to the electrodes implanted within the cochlea (Column 3, lines 20-26). Furthermore, in regard to the

preprocessed signal, Schulman discloses that the audio signals received by the WP from the microphone are processed by a conventional audio front end with automatic gain control (Column 4, lines 48-52). Therefore, the WP performs the necessary preprocessing.

26. In regard to claim 24, Schulman discloses, "The output of the multiplexer (94) is amplified through a series of telemetry gain stages (96), which are connected to an A to D converter (98). (Column 7, lines 30-32) (See also Figure 2). Since elements 94, 96, and 98 are all part of the second processor (46) and the type of amplification was never specified, the second processor does serve as an amplification device.

27. In regard to claim 26, Schulman discloses that the preprocessed sounds are fed from the first processor to the second processor through telemetry (See figure 1, elements 34, 36, 40, and 42; See also Column 5, lines 3-5). Furthermore, Schulman discloses that power and data information are sent from the WP to the ICS through a main coil (element 50 on figure 2) to the receiver (40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. Claims 4, 11, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schulman et al. (US 5,531,774) in view of Karunasiri.
29. In regard to claim 4, Schulman teaches a cochlear stimulation device that has two components: a wearable processor and an implantable cochlear stimulator (ISC). However, Schulman fails to teach both processors on the same chip and located within the same housing. Karunasiri teaches that both processors can be located separately from one another or within the same housing. Karunasiri discloses that the circuitry of the remote processor (the wearable processor of Schulman) can be placed within the same housing as the ISC as additional circuitry. Since it is known that a chip contains circuits, both processors can be placed on the same chip. Therefore, it would be obvious to one of ordinary skill in the art to modify the Schulman device in view of the teachings of Karunasiri in order to make the device more compact and even completely implantable.
30. In regard to claims 11 and 18, Schulman, as discussed above, discloses a system to enhance the performance of a cochlear implant using a preprocessor, but fails to teach that the two processors can be housed within the same casing. Karunasiri discloses circuitry for use in conjunction with a cochlear implant system and how it can be arranged. Karunasiri, as discussed above, discloses, "Alternatively, such separate housing may be part of an external or wearable portion, as shown in Fig. 1, in which case the remote processor (16') shown in Fig. 2 may actually comprise the wearable processor (16) shown in Fig. 1. Thus it is seen that the "remote processor" (16') may be implanted within the same case

as the stimulator circuitry, implanted within a separate case coupled to the stimulator case, or external (non-implanted)" (Column 11, lines 52-59). It should be noted that Karunasiri has incorporated the Schulman patent by reference. In view of these teachings, it would be obvious to one of ordinary skill in the art to modify the device of Schulman (US 5,531, 774) in view of the teachings of Karunasiri (US 6,195,585) in order to minimize the amount of space occupied by the device.

31. Claims 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schulman et al. (US 5,531,774) in view of Hahn et al. (US 6,212,431). In regard to claims 12 and 19, Schulman, as discussed above, discloses a cochlear stimulation system comprising a wearable processor and an implanted cochlear stimulator (ICS). However, Schulman fails to teach a compatibility circuit of any kind between the wearable processor and the ICS. Hahn teaches, "...an automatically adjustable impedance matching circuit for use within the external device of an implantable medical system, such as an implantable cochlear system (ICS), that is able to maintain an optimum power transfer between the external device and implant device despite variations in separation distance and/or implant load. (Column 3, lines 26-32). Schulman discloses, "The ICS status indicating signals are telemetered back to the WP, which includes means for receiving and processing the ICS status indicating signals. For example, such means may include means for controlling the power level of transmissions to the ICS. (Column 3, lines 30-33). Since Schulman is already trying to control

Art Unit: 3762

power transfer between the two devices, it would be obvious to one of ordinary skill in the art to modify the device of Schulman to have an impedance matching circuit in view of the teachings of Hahn, in order to enable the device to automatically maintain an optimum power transfer between the wearable processor and the ICS.

32. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schulman et al. (US 5,531,774) in view of Lindemann et al. (US 5,479,522). Schulman, as discussed above, discloses a device for cochlear stimulation. However, Schulman fails to teach a device that can be used in both ears simultaneously. Lindemann teaches a binaural hearing aid that is capable of taking in data from both ears, processing the data, and outputting the signal to speakers contained within the earpieces. In figure 1A, Lindemann discloses that the signal received by the microphone is pre-processed, analyzed through an analog to digital converted and processed through a DSP. This figure also depicts that the information from both microphones is being sent to the same digital signal processor. Furthermore, Schulman discloses, "the audio signals processed by the audio front end (22) are transmitted to a bank of filters (24) for filtering and for generation of a plurality of parallel audio signals. The audio signals are processed by a multiplexer (26) and converted into a series of digital signals by an A to D converter (28) for application to a microprocessor (30). (Column 5, lines 49-55). Schulman further discloses, "The filter bank may also be implemented as a group of digital filters, for example in a digital signal

processor integrated circuit" (Column 5, lines 54-56). Since Schulman discloses that the preprocessing of the input signal, the conversion of the signal from an analog signal to a digital signal, and the digital signal processing of the signal all occur in the same processor, it would be obvious to one of ordinary skill in the art to modify the Schulman device in view of the teachings of Lindemann in order to allow the device to be used in patients who are deaf in both ears, as opposed to just one.

33. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schulman et al. (US 5,531,774). Schulman, as discussed above, teaches a cochlear stimulation device that performs the preprocessing functions externally and then transmits this data to the implanted cochlear stimulator. This same principle can also be applied to stimulate both ears simultaneously. Therefore, it would have been obvious to one of ordinary skill in the art to modify the Schulman device so that patients who are deaf in both ears can use it.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joy P. Patel whose telephone number is 571-272-5556. The examiner can normally be reached on Monday - Friday 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pezzuto can be reached on (571)-272-6996. The fax phone

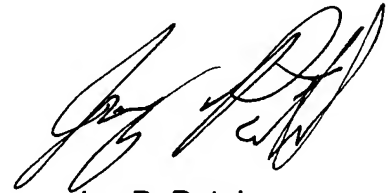
Art Unit: 3762

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Supervisory Patent Examiner
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Joy P. Patel
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